

WHAT IS CLAIMED IS:

1. An inspection apparatus for inspecting a board used in a liquid crystal panel, in which a liquid crystal driving signal is applied to said board to cause a potential variation in an electrode of said board, and said potential variation is detected in a non-contact manner, said inspection apparatus comprising:
- detect means for detecting the potential variation in said electrode by use of a plurality of sensor elements; and
- select means for outputting a select signal for selecting said sensor elements,
- 10 wherein
- each of said sensor elements is formed on a single crystal of a semiconductor or on a flat plate, and
- each of said sensor elements includes;
- a passive device operable as a counter electrode coupled capacitively with
- 15 said electrode to detect the potential variation in said electrode and generate a detect signal, and
- a transistor adapted to output said detect signal in response to said select signal.
- 20 2. An inspection apparatus as defined in claim 1, wherein said sensor electrodes are located around a position at which a counter electrode serving as one component of said liquid crystal panel is to be installed.
3. An inspection apparatus as defined in claim 1, wherein said liquid crystal panel is a TFT liquid crystal panel comprising a thin-film transistor having a source electrode, drain electrode and gate electrode, wherein said detect means is adapted to detect the potential variation in said drain electrode caused by applying the liquid crystal driving signal to said source and gate electrodes.
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4. An inspection apparatus as defined in claim 1, wherein said transistor of each of said sensor elements is a current-readout MOSFET having a source, drain and gate, wherein said passive device is continuously formed with a diffusion layer served as said source, and said detect signal is obtained from said drain by inputting said select signal into said gate.

5. An inspection apparatus as defined in claim 1, wherein said transistor of each of said sensor elements is a current-readout thin-film transistor having a source, drain and gate, wherein said passive device is connected to said source, and said detect signal is obtained from said drain by inputting said select signal into said gate.

6. An inspection apparatus as defined in claim 1, wherein said transistor of each of said sensor elements includes a first MOSFET and a second MOSFET connected in series with each other, wherein said passive device is connected to a gate of said first MOSFET, and said select signal is connected to a gate of said second MOSFET, wherein a potential of a source of said first MOSFET is varied in response to the potential of said passive device applied to said gate of said first MOSFET, said varied potential being received by a drain of said second MOSFET, and said received potential being outputted from a source of said second MOSFET as said detect signal.

7. An inspection apparatus as defined in claim 1, wherein said transistor of each of said sensor elements includes a first thin-film transistor and a second first thin-film transistor connected in series with each other, wherein said passive device is connected to a gate of said first thin-film transistor, and said select signal is connected to a gate of said second thin-film transistor, wherein a potential of a source of said first thin-film transistor is varied in response to the potential of said passive device applied to said gate of said first thin-film transistor, said varied potential being received by a drain of said second thin-film transistor, and said received potential being outputted from a source of said second thin-film transistor as said detect signal.

8. An inspection apparatus as defined in claim 1, wherein said transistor of each of said sensor elements is a bipolar transistor having an emitter, collector and base, wherein said passive device is connected to said emitter, and said detect signal is obtained from said collector by inputting said select signal to said base.

9. An inspection apparatus as defined in claim 1, wherein said transistor of each of said sensor elements is a charge-readout MOSFET having a source, drain and gate, wherein said passive device is formed continuously with a diffusion layer serving as said source, wherein said select signal is inputted into said gate to lower a potential barrier formed below said gate so as to transfer a signal charge residing in said source to said drain as said detect signal, and said transferred detect signal is transferred by a charge-transfer device connected to said drain.

10. An inspection apparatus as defined in claim 9, which further includes a charge-supply MOSFET for supplying a charge to said passive device in response to the potential variation in said electrode to form a potential barrier so as not to cause the backflow of said supplied charge before completing the potential variation in said electrode, said charge-supply MOSFET having a drain formed continuously with said diffusion layer serving as said passive device.

11. An inspection apparatus as defined in claim 1, wherein said sensor elements are arranged in a matrix form.

12. An inspection apparatus as defined in claim 1, which further includes a conductor plate in contact with the surface of said passive device.

13. An inspection apparatus as defined in claim 1, which further includes shading means for preventing light from irradiating said semiconductor of each of said sensor

elements.

14. A method for inspecting a board used in a liquid crystal panel, in which a liquid crystal driving signal is applied to said board to cause a potential variation in an electrode of a board used in said liquid crystal panel, and said potential variation is detected in a non-contact manner by use of a plurality of sensor elements, wherein
- 5 each of said sensor elements is formed on a single crystal of a semiconductor or on a flat plate, and
- each of said sensor elements includes;
- 10 a passive device operable as a counter electrode coupled capacitively with said electrode to detect the potential variation in said electrode, and
- a transistor adapted to output a detect signal from said passive device.